Mutual authentication / cipher key delivery system

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- GB2279540 (B)
- US5544245 (A)
- JP6350598 (A)

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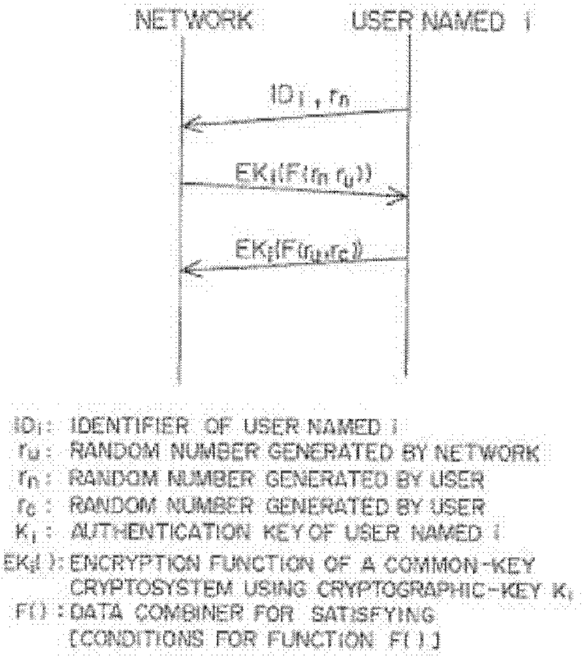
Abstract of **GB 2279540 (A)**

A network and each user i share an encryption algorithm EKi() using his authentication key Ki as a cipher key, its inverse function EKi-1(), a specific function F() and its inverse function F<1)<), and a function G(). The network calculates C1 = EKi(F(rn, ru)), using a random number rn generated by the user and a random number ru generated by the network, and sends it to the user. The user calculates (d1, d2) - F-1(EKi<-1)<C1)) and, if d1 = rn, judges the network to be an authorized one. The user generates a random number rc and sends C2 = EKi(F(d2, rc)) to the network. The network calculates (d3, d4) = F-1(EKi-1(C2)) and, if d3 = ru, judges the user to be an authorized one.

Fig. 1


NETWORK
USER NAMED i
IDi, rn
EKi(F(rn ru))
EKi(F(ru,rc))
IDi : IDENTIFIER OF USER NAMED i
ru : RANDOM NUMBER GENERATED BY NETWORK
rn : RANDOM NUMBER GENERATED BY USER
rc : RANDOM NUMBER GENERATED BY USER
Ki : AUTHENTICATION KEY OF USER NAMED i
EKi( ): ENCRYPTION FUNCTION OF A COMMON-KEY CRYPTOSYSTEM USING CRYPTOGRAPHIC-KEY Ki
F( ) : DATA COMBINER FOR SATISFYING [CONDITIONS FOR FUNCTION F( )]